WHAT IS CLAIMED IS

1) A supercharged radial vane rotary power device having an end shaft extending along a rotation axis of the device, the device comprising a rotor assembly rotatable about the axis and a stator comprising:

a front stator portion having the end shaft journaled therewithin, the front stator portion joined to a back stator portion along respective mating faces to form an internal volume containing the rotor assembly;

the back stator portion comprising a central inwardly projecting cylindrical portion comprising at least one passageway comprising an intake channel communicating with at least one radial intake port formed in a peripheral wall of the projecting portion;

and wherein the rotor assembly comprises:

a block having the end shaft extending therefrom, the end shaft coupled to the block by means comprising a plurality of fan blades extending radially across an inlet opening and communicating with a central bore for receiving, with rotational clearance, the central inwardly projecting cylindrical portion of the back stator portion; the block rotatably carried by the stator;

a selected number, greater than one, of radial compartments equidistantly spaced apart about the axis of the device, each of the compartments open to an outer peripheral surface of the block, each of the compartments having a respective inner opening intermittently communicating with the at least one radial port in the peripheral wall of the central cylindrical

inwardly projecting portion of the stator during the course of each rotation of the rotor assembly; and

the same selected number of radially extending vane assemblies slidably disposed in respective slots within the block in alternating relation with the radial compartments, each of the vanes comprising a respective cam follower engaging a cam track defined by respective grooves formed in the respective mating faces of the front and back stator portions.

2) The supercharged radial vane rotary power device of Claim 1 wherein spaces between the fan blades provide fluid communication between the inlet opening and the at least one passageway in the centrally projecting stator portion of the back stator portion.

3) The supercharged radial vane rotary power device of Claim 1 wherein each of the cam followers comprises a respective medial ring portion attached to a respective outer tip of a respective vane, each medial ring capturing a respective freely sliding element for engaging the cam track.

4) The supercharged radial vane rotary power device of Claim 3 wherein each sliding element comprises a respective ball.

5) The supercharged radial vane rotary power device of Claim 1 wherein the at least one radial intake port communicates with each radial compartment in the course of each rotation of the block;

and the stator portion further comprises:

at least one passageway comprising an exhaust channel comprising at least one radial exhaust port formed in a

peripheral wall of the projecting stator portion and communicating with each radial compartment in the course of each rotation of the block; and

at least one ignition port communicating with each radial compartment during each rotation of the block;

whereby the radial vane rotary power device is adapted to function as a four-phase internal combustion engine.

6) The supercharged radial vane rotary power device of Claim 1 wherein the at least one radial intake port communicates with each radial compartment in the course of each rotation of the block; and

the stator portion further comprises:

at least one exhaust passageway comprising an exhaust port communicating with each radial compartment in the course of each rotation of the block; and

at least one ignition port communicating with each radial compartment during the course of each rotation of the block;

whereby the radial vane rotary power device is adapted to function as a four-phase internal combustion engine.

7) The supercharged radial vane rotary power device of Claim 1, wherein

the central cylindrical inwardly projecting stator portion comprises at least two passageways comprising the one inlet channel connected to a pair of diagonally disposed intake

ports, each of the intake ports communicating with each radial compartment in the course of each rotation of the block; and

one discharge passageway connected to a pair of diagonally disposed discharge ports, each discharge port communicating with each radial compartment in the course of each rotation of the block;

whereby the radial vane rotary power device is adapted to function as one of a pump, a compressor, a fluid-driven motor and an expander device.

8) The supercharged radial vane rotary power device of Claim 1, wherein

the inlet channel is connected to a pair of diagonally disposed intake ports, each intake port communicating with each radial compartment in the course of each rotation of the block; and

an outer portion of the back stator portion comprises at least a diagonally disposed pair of discharge passageways connected to at least one discharge port, each passageway communicating with each radial compartment in the course of each rotation of the block;

whereby the radial vane rotary power device is adapted to function as one of a pump, a compressor, a fluid-driven motor and an expander device.

9) The supercharged radial vane rotary power device of Claim 1 wherein

the central cylindrical inwardly projecting portion comprises at least two passageways comprising:

the inlet channel, which is connected to a pair of diagonally disposed intake ports, each port communicating with each radial compartment in the course of each rotation of the block; and

an exhaust passageway, which is connected to a pair of diagonally disposed exhaust ports, each port communicating with each radial compartment in the course of each rotation of the block; and

wherein an outer portion of the back stator portion comprises at least a pair of diagonally disposed ignition ports for receiving respective igniters, each ignition port communicating with each radial compartment during each rotation of the block;

whereby the radial vane rotary power device is adapted to function as two-phase internal combustion engine.

10) The supercharged radial vane rotary power device of Claim 1 wherein

the inlet channel is connected to a pair of diagonally disposed intake ports, each port communicating with each radial compartment in the course of each rotation of the block;

an outer portion of the back stator portion comprises a pair of diagonally disposed exhaust passageways connected to at least one discharge port, each exhaust passageway

communicating with each radial compartment in the course of each rotation of the block; and

the outer portion of the back stator portion comprises at least a pair of diagonally disposed ignition ports, each ignition port communicating with each radial compartment during each rotation of the block;

whereby the radial vane rotary power device is adapted to function as two-phase internal combustion engine.

11) The rotary power device of Claim 1 wherein the central inwardly projecting stator portion comprises a transverse wall separating a frontal intake channel from a back exhaust channel.

12) A supercharged four-phase rotary internal combustion engine comprising:

a stator defining an internal volume having an oval cross-section transverse to an axis of rotation, the stator comprising respective front and back stator portions comprising respective mating surfaces for mating along a medial plane transverse to the axis;

the front and back stator portions comprising respective cam grooves in the respective mating surfaces, the cam grooves defining a cam track encircling the internal volume, the cam track communicating with the internal volume through an encircling slot formed from recessed wall portions of the respective mating faces of the back and front stator portions;

the front stator portion comprising a central throughhole for receiving an end shaft extending along the axis from a rotor

block, the back stator portion comprising a central cylindrical portion projecting into the internal volume along the axis, the projecting portion comprising at least one inlet passageway for communicating with at least one peripheral inlet port;

a rotor assembly comprising the rotor block comprising a central cylindrical bore for receiving the cylindrical projecting stator portion, the rotor block coupled to an end shaft by means comprising an axial fan portion for inducting a charge and communicating the charge to the at least one inlet passageway of the projecting portion of the back stator portion, the block rotatable within a rotor chamber portion of the internal volume lying between the internally projecting stator portion and an inner peripheral wall of the internal volume, the block comprising a selected number, greater than one, of radial compartments equidistantly spaced apart about the axis of the device, each of the compartments open to a peripheral surface of the block, each of the compartments having a respective inner opening communicating with the at least one axially aligned radial port in the central internally projecting stator portion during the course of each rotation of the rotor assembly, the rotor assembly further comprising the selected number of radially extending vane slots disposed within the block in alternating relation with the radial compartments; and

the same selected number of vane assemblies, each assembly comprising a respective inner flat portion slidably received in a respective rotor slot and a respective outer ring portion medially fixed to an outer tip of the associated inner portion, each ring portion respectively enclosing a freely sliding ball element captured within the respective ring vane portion and within the cam track.

13) The supercharged four-phase rotary internal combustion engine of Claim 12 wherein the internally projecting stator portion further comprises an exhaust passageway communicating with a peripheral exhaust port; and wherein an outer external stator portion comprises an ignition port.

14) The supercharged four-phase rotary internal combustion engine of Claim 12 wherein an outer external stator portion comprises an igniter and an exhaust passageway connected to an exhaust port.

15) The supercharged four-phase rotary internal combustion engine of Claim 12 wherein the rotor assembly axial fan portion comprises a plurality of blades, each blade having a respective base coupled to the end shaft, each blade further having a respective outer tip fixed to the rotor block.

16) A rotary power device operable as one of a pump and an expander, the device comprising:

a stator having an internal volume having an oval cross-section transverse to the axis, the stator comprising front and back stator portions mating along a medial transverse plane perpendicular to the axis; the front stator portion comprising a central throughhole, the back stator portion comprising a cylindrical portion extending into the internal volume along an axis of the device, the cylindrical portion comprising at least one inlet passageway communicating with at least one pair of diagonal opposed peripheral inlet ports, the inlet passageway for receiving an inlet fluid charge passing between blades of an axial fan portion of a rotor block;

a rotor assembly comprising:

an end shaft rotatable about the axis and extending outwardly from the throughhole in the front stator portion, the end shaft connected to the rotor block by means comprising a plurality of fan blades;

the rotor block comprising a central cylindrical bore for receiving the cylindrical projecting stator portion, the block rotatable within a rotor chamber portion of the internal volume lying between the internally projecting stator portion and an inner peripheral wall of the internal volume;

the rotor assembly further comprising:

a selected number, greater than one, of radial compartments equidistantly spaced apart about the axis of the device, each of the compartments open to a peripheral surface of the block, each of the compartments having a respective inner opening communicating with the at least one port in the peripheral wall of the internally projecting stator portion at least once during the course of each rotation of the rotor assembly;

the selected number of radially extending vane slots disposed within the block in an alternating relation with the radial compartments; and

the selected number of vane assembles, each vane assembly comprising a respective inner flat portion slidably received in a respective vane slot and a respective outer portion medially fixed to the inner portion and slidably received in a cam track formed in the stator; and

a respective ball element captured by the respective outer portion of the vane, each ball element also captured within the cam track.

17) The rotary power device of Claim 16 wherein the stator further comprises two diametrically opposed exhaust passageways, each exhaust passageway comprising a recessed wall portion in an inner wall of the stator, each exhaust passageway connected to a respective exhaust port spaced radially outwardly from the internally projecting stator portion.

18) The rotary power device of Claim 16 wherein the internally projecting stator portion comprises two diametrically opposed exhaust ports communicating with a common exhaust passageway.

19) The rotary power device of Claim 16 wherein each of the blades of the axial fan portion comprises a respective base coupled to the end shaft and having a respective outer tip fixed to a hub portion of the rotor block.

20) A supercharged two-phase internal combustion engine comprising

a stator defining an internal volume having an oval cross-section transverse to an axis of rotation, the stator comprising respective front and back stator portions comprising respective mating surfaces for mating along a medial plane transverse to the axis, the front and back stator portions comprising respective cam grooves in the respective mating surfaces, the cam grooves defining a cam track encircling the internal volume; the cam track communicating with the internal volume through an encircling slot formed from recessed wall portions of the respective

mating faces of the back and front stator portions; the front stator portion comprising a central throughhole for rotatably carrying an end shaft; the back stator portion comprising a central cylindrical portion projecting into the internal volume along the axis, the projecting portion comprising at least one inlet passageway with at least one pair of diagonally disposed peripheral inlet ports;

a rotor assembly comprising a rotor block comprising a central cylindrical bore for receiving the cylindrical projecting stator portion, the rotor block coupled to the end shaft by means comprising an axial fan portion for inducting a charge into the at least one passageway in the projecting stator portion of the back stator portion, the block rotatable within a rotor chamber portion of the internal volume lying between the internally projecting stator portion and an inner peripheral wall of the internal volume, the block comprising a selected number, greater than one, of radial compartments equidistantly spaced apart about the axis of the device, each of the compartments open to a peripheral surface of the block, each of the compartments having a respective inner opening communicating with the at least one axially aligned radial port in the central internally projecting stator portion during the course of each rotation of the rotor assembly, the rotor assembly further comprising the selected number of radially extending vane slots disposed within the block in alternating relation with the radial compartments; and

the selected number of vane assembles, each assembly comprising a respective inner flat portion slidably received in a respective rotor slot and a respective outer ring portion medially fixed to an outer tip of the associated inner portion, each ring portion respectively enclosing a freely

sliding ball element captured within the respective ring vane portion and within the cam track.

21) The supercharged two-phase rotary internal combustion engine of Claim 20 wherein the internally projecting stator portion further comprises an exhaust passageway communicating with a pair of diagonally disposed peripheral exhaust ports.

22) The supercharged two-phase rotary internal combustion engine of Claim 20 wherein the internally projecting stator portion comprises an intake passageway communicating with a pair of diagonally disposed peripheral intake port and the outer stator portion comprises both a pair of exhaust passageways connected to respective exhaust ports and a pair of diagonally disposed ignition ports.

23) The supercharged two-phase rotary internal combustion engine of Claim 20 wherein the rotor assembly axial fan portion comprises a plurality of blades, each blade having a respective base fixed to the end shaft and a respective outer tip fixed to the rotor block.